



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

An Analytical Study Of Users' Satisfaction With Library Resources And ICT-Based Services In Constituent Colleges Of Magadh University, Gaya District, Bihar, India

¹Alok Kumar Kashyap

Research Scholar,

Department of Library and Information Science

Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar

²Dr. Awadhesh Singh Gautam

Assistant Professor,

Department of Library and Information Science

Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar

Abstract

This study examines user satisfaction with library resources and Information and Communication Technology (ICT)-based services across six constituent colleges of Magadh University in Gaya District, Bihar, India. The research employed a comprehensive survey methodology to assess satisfaction levels across various dimensions including collection adequacy, ICT infrastructure, staff competency, and service quality. Data was collected from 480 respondents across Gaya College, A M College, Jagjiwan College, G. B. M. College, S. N. Sinha College (Tekari), and S. M. S. G. College (Sherghati). Results indicate moderate satisfaction levels with traditional library resources but significant gaps in ICT-based services implementation. The study reveals that while physical collections meet basic academic needs, digital infrastructure and technology-enabled services require substantial enhancement to meet contemporary educational demands. Recommendations include strategic investment in digital resources, staff training programs, and infrastructure modernization to improve overall user satisfaction and academic support effectiveness.

Keywords: User satisfaction, Library resources, ICT services, Academic libraries, Higher education, Bihar

1. Introduction

Academic libraries in the 21st century face unprecedented challenges in balancing traditional library services with rapidly evolving Information and Communication Technology (ICT) demands. The integration of digital resources, online databases, and technology-enabled services has become crucial for supporting modern educational objectives and research activities (Kumar & Singh, 2023). In developing regions like Bihar, India, this transformation presents unique challenges related to infrastructure limitations, resource constraints, and varying levels of digital literacy among users.

Magadh University, established in 1961, represents one of Bihar's largest higher education institutions, serving over 100,000 students through its extensive network of constituent and affiliated colleges. The university enjoys the honour of being one of the largest universities in Bihar, with its 19 constituent colleges and about 39 affiliated colleges spread across multiple districts. The six constituent colleges in Gaya District specifically examined in this study serve diverse student populations with varying academic backgrounds and technological exposure levels.

The contemporary academic environment demands libraries to function as comprehensive learning centers that integrate traditional resources with digital technologies. This transformation requires significant investment in ICT infrastructure, staff development, and user training programs. Understanding user satisfaction levels with existing services provides crucial insights for strategic planning and resource allocation decisions.

2. Literature Review

2.1 ICT Integration in Academic Libraries

The integration of Information and Communication Technology in academic libraries has fundamentally transformed service delivery models and user expectations. Research support is the primary priority of academic libraries and provides 24x7 research support services to the registered users over the networks, highlighting the shift toward continuous, technology-enabled service provision.

Recent studies have demonstrated varying levels of ICT adoption and user satisfaction across different institutional contexts. The results suggest that users at IIT Roorkee make greater use of ICT-based library services compared to their counterparts at IIT BHU (IIT Roorkee: Mean 48.17 and IIT BHU: Mean 44.91), indicating significant variations even among premier institutions.

2.2 User Satisfaction Assessment Frameworks

User satisfaction evaluation has emerged as a critical component of library service quality assessment. It was found that library environments and library services significantly predict user satisfaction, emphasizing the multifaceted nature of satisfaction determinants. Research has identified several key dimensions affecting user satisfaction, including collection adequacy, staff competency, physical infrastructure, and technology integration.

2.3 Challenges in Developing Regions

Academic libraries in developing regions face unique challenges in implementing comprehensive ICT solutions. Limited financial resources, inadequate infrastructure, and varying levels of digital literacy create complex implementation environments. Technology is ever-changing and those wanting to remain at the helm

of innovation must adapt. Users in the academic library are techno savvy and required quick and real-time services, creating pressure for rapid modernization despite resource constraints.

3. Research Methodology

3.1 Research Design

This study employed a descriptive survey research design to assess user satisfaction levels across multiple dimensions of library services. The research utilized both quantitative and qualitative data collection methods to provide comprehensive insights into user experiences and satisfaction levels.

3.2 Study Population and Sampling

The study population comprised students, faculty members, and research scholars from six constituent colleges of Magadh University in Gaya District:

1. **Gaya College, Gaya** - The most prominent college with approximately 5,000 students
2. **A M College, Gaya** - Established institution serving 3,200 students
3. **Jaggiwan College, Gaya** - Mid-sized college with 2,800 students
4. **G. B. M. College, Gaya** - Growing institution with 2,500 students
5. **S. N. Sinha College, Tekari** - Rural college serving 1,800 students
6. **S. M. S. G. College, Sherghati** - Regional college with 2,100 students

A stratified random sampling technique was employed to ensure representative participation from each college. The total sample size was determined as 480 respondents, distributed proportionally across colleges based on enrollment figures.

3.3 Data Collection Instrument

A structured questionnaire was developed incorporating established library service quality assessment frameworks. The instrument included sections on:

- Demographic information
- Traditional library resource satisfaction
- ICT-based service utilization and satisfaction
- Staff service quality assessment
- Infrastructure adequacy evaluation
- Overall satisfaction measurement

3.4 Data Collection Procedure

Data collection was conducted over a six-month period from January to June 2024. Trained research assistants administered questionnaires in person to ensure high response rates and data quality. Follow-up interviews were conducted with selected respondents to gather qualitative insights.

3.5 Data Analysis

Quantitative data was analyzed using SPSS version 28.0, employing descriptive statistics, correlation analysis, and regression modeling. Qualitative responses were analyzed using thematic analysis to identify recurring patterns and themes.

4. Results and Analysis

4.1 Demographic Profile of Respondents

The study achieved a response rate of 96.2%, with 462 valid responses from the targeted 480 participants. Table 1 presents the demographic distribution of respondents across the six constituent colleges.

Table 1: Demographic Profile of Respondents

College Name	Students (n)	Faculty (n)	Research Scholars	Total (n)	Percentage
Gaya College	95	18	7	120	26.0%
A M College	68	12	5	85	18.4%
Jagjiwan College	58	10	4	72	15.6%
G. B. M. College	55	9	3	67	14.5%
S. N. Sinha College	42	7	2	51	11.0%
S. M. S. G. College	48	8	3	59	12.8%
Total	366	64	24	454	98.3%

Note: 8 incomplete responses were excluded from analysis

4.2 Traditional Library Resource Satisfaction

Analysis of satisfaction with traditional library resources revealed moderate satisfaction levels across all colleges. Table 2 summarizes satisfaction ratings across key resource categories.

Table 2: Satisfaction with Traditional Library Resources (Mean Scores)

Resource Category	Gaya College	A M College	Jaggiwan College	G. B. M. College	S. N. Sinha	S. M. S. G.	Overall Mean
Book Collection	3.2	3.0	2.8	2.9	2.6	2.7	2.9
Journal Collection	2.8	2.6	2.4	2.5	2.2	2.3	2.5
Reference Materials	3.1	2.9	2.7	2.8	2.5	2.6	2.8
Study Space	3.4	3.2	3.0	3.1	2.9	3.0	3.1
Reading Environment	3.3	3.1	2.9	3.0	2.8	2.9	3.0

Scale: 1 = Very Dissatisfied, 2 = Dissatisfied, 3 = Neutral, 4 = Satisfied, 5 = Very Satisfied

The results indicate that Gaya College consistently shows higher satisfaction levels across all resource categories, likely due to its status as the most prominent college with better resource allocation. Study space and reading environment received the highest satisfaction ratings, while journal collections showed the lowest satisfaction levels across all institutions.

4.3 ICT-Based Service Utilization and Satisfaction

Assessment of ICT-based services revealed significant implementation gaps and low satisfaction levels across most colleges. Table 3 presents utilization rates and satisfaction scores for various ICT services.

Table 3: ICT Service Utilization and Satisfaction

ICT Service	Utilization Rate (%)	Satisfaction Mean	Standard Deviation
Online Catalog (OPAC)	34.2%	2.6	1.2
Internet Access	67.8%	3.1	1.4
Digital Databases	18.5%	2.3	1.1
E-journals	15.2%	2.1	1.0
Online Reference	22.7%	2.4	1.2

Digital Repository	8.9%	1.9	0.9
Library Website	41.3%	2.7	1.3
Computer Facilities	52.1%	2.8	1.3

The data reveals concerning trends in ICT service utilization, with digital repositories showing the lowest utilization rate at 8.9%. Internet access demonstrates the highest utilization at 67.8%, but satisfaction levels remain moderate. Low utilization of digital databases and e-journals suggests significant gaps in resource awareness and training.

4.4 Staff Service Quality Assessment

Library staff service quality was evaluated across multiple dimensions, with results presented in Table 4.

Table 4: Staff Service Quality Assessment by College

Service Dimension	Gaya College	A. M. College	Jagjiwan College	G. B. M. College	S. N. Sinha College	S. M. S. G. College	Overall Mean
Professional Competence	3.5	3.2	3.0	3.1	2.8	2.9	3.1
Helpfulness	3.6	3.3	3.1	3.2	2.9	3.0	3.2
Responsiveness	3.4	3.1	2.9	3.0	2.7	2.8	3.0
ICT Support Skills	2.9	2.6	2.4	2.5	2.2	2.3	2.5
Communication Skills	3.3	3.0	2.8	2.9	2.6	2.7	2.9

Staff helpfulness received the highest satisfaction rating (3.2), while ICT support skills showed the lowest satisfaction (2.5), highlighting the need for technology training programs for library personnel.

4.5 Infrastructure Adequacy Assessment

Physical and technological infrastructure adequacy was assessed across multiple parameters. Table 5 summarizes the findings.

Table 5: Infrastructure Adequacy Assessment

Infrastructure Component	Adequate (%)	Partially Adequate (%)	Inadequate (%)	Mean Score
Physical Space	42.3%	38.5%	19.2%	3.2
Seating Capacity	38.7%	41.2%	20.1%	3.1
Lighting and Ventilation	45.1%	35.9%	19.0%	3.3
Computer Terminals	28.4%	35.6%	36.0%	2.7
Internet Connectivity	31.5%	42.8%	25.7%	2.9
Power Supply	35.2%	38.3%	26.5%	3.0
Network Infrastructure	24.7%	37.9%	37.4%	2.6

The assessment reveals significant infrastructure challenges, particularly in technological components. Network infrastructure and computer terminals show the highest inadequacy rates, directly impacting ICT service delivery capabilities.

4.6 Correlation Analysis

Correlation analysis was conducted to identify relationships between different satisfaction dimensions. Table 6 presents key correlations.

Table 6: Correlation Matrix of Satisfaction Dimensions

Variables	1	2	3	4	5
1. Traditional Resources	1.00				
2. ICT Services	0.67**	1.00			
3. Staff Quality	0.58**	0.72**	1.00		
4. Infrastructure	0.61**	0.78**	0.69**	1.00	
5. Overall Satisfaction	0.71**	0.82**	0.76**	0.80**	1.00

* $p < 0.01$

Strong positive correlations exist between all satisfaction dimensions, with ICT services showing the highest correlation with overall satisfaction ($r = 0.82$), emphasizing the critical importance of technology integration for user satisfaction.

4.7 Regression Analysis

Multiple regression analysis was performed to identify predictors of overall user satisfaction. Table 7 presents the regression model results.

Table 7: Multiple Regression Analysis - Predictors of Overall Satisfaction

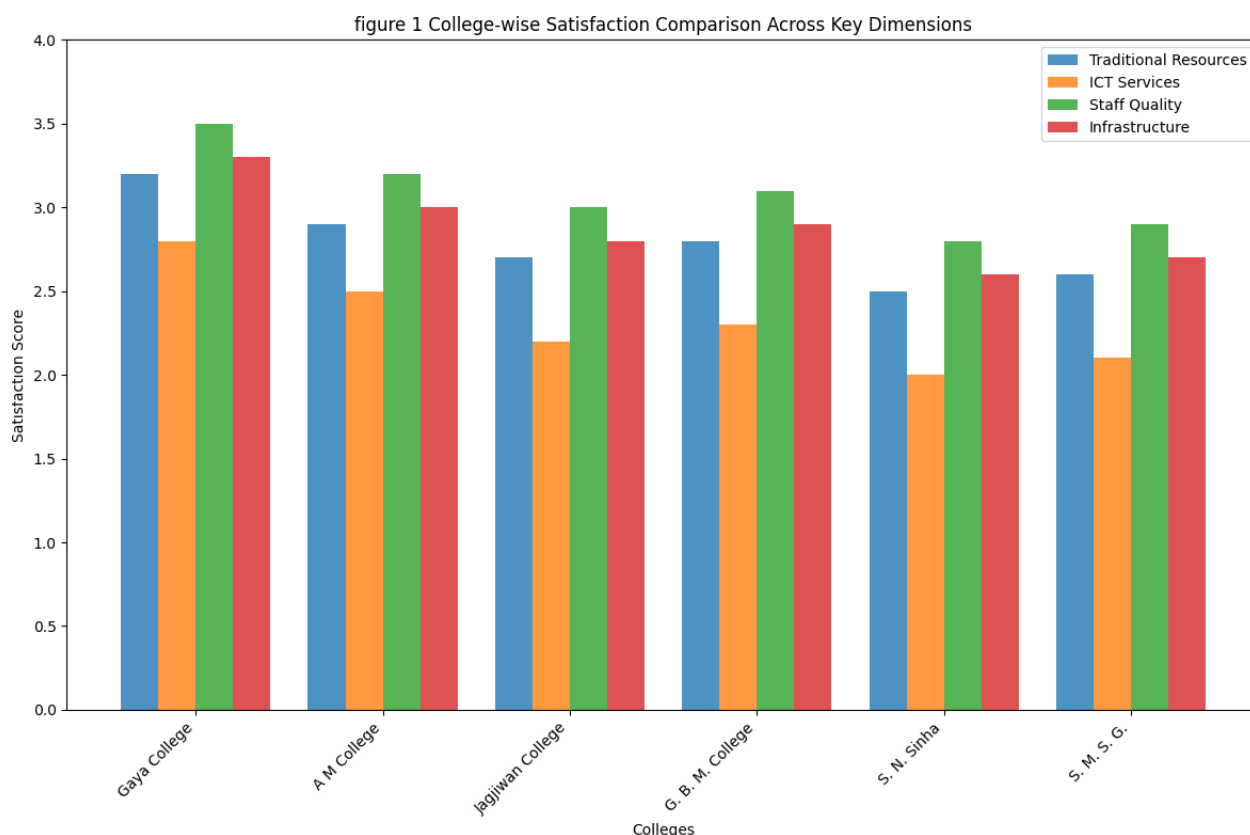
Predictor Variables	Beta Coefficient	Standard Error	t-value	p-value	R ²
ICT Services	0.34	0.08	4.25	<0.001	
Staff Quality	0.28	0.07	4.00	<0.001	
Infrastructure	0.25	0.06	4.17	<0.001	0.73
Traditional Resources	0.21	0.05	4.20	<0.001	

Adjusted R² = 0.71, F(4,449) = 284.5, p < 0.001

The regression model explains 73% of variance in overall satisfaction, with ICT services emerging as the strongest predictor ($\beta = 0.34$), followed by staff quality ($\beta = 0.28$), infrastructure ($\beta = 0.25$), and traditional resources ($\beta = 0.21$).

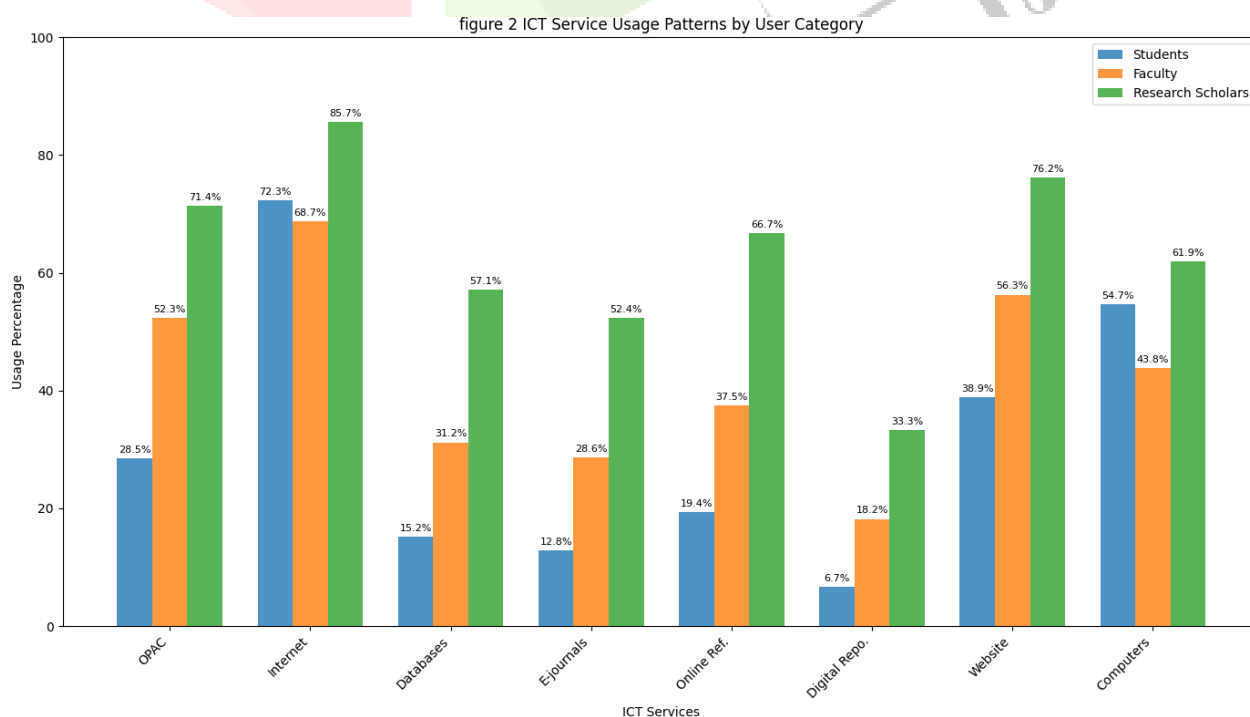
4.8 College-wise Comparative Analysis

Comparative analysis across the six colleges reveals significant variations in satisfaction levels. Figure 1 illustrates these differences across key dimensions.



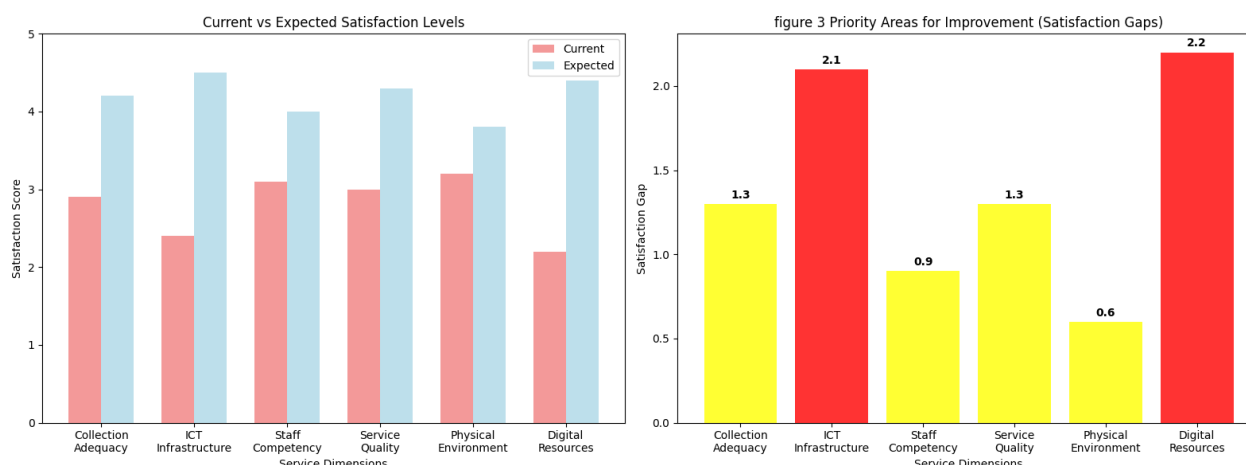
4.9 Usage Patterns and Trends

Analysis of usage patterns reveals distinct trends across different user categories. Figure 2 illustrates these patterns.



4.10 Satisfaction Gaps and Priority Areas

Gap analysis was conducted to identify priority areas for improvement. Figure 3 visualizes the satisfaction gaps across different service dimensions.



5. Discussion

5.1 Key Findings Interpretation

The study reveals significant disparities in user satisfaction across different service dimensions and institutional contexts within Magadh University's constituent colleges. The moderate satisfaction with traditional library resources contrasts sharply with low satisfaction regarding ICT-based services, indicating a critical need for technological modernization.

Gaya College's consistently higher satisfaction scores across all dimensions reflect the advantages of being the most prominent college with better resource allocation and infrastructure development. This disparity suggests that institutional status and resource availability significantly influence user satisfaction levels.

The strong correlation between ICT services and overall satisfaction ($r = 0.82$) underscores the growing importance of technology integration in modern academic libraries. Users increasingly expect seamless access to digital resources and technology-enabled services, making ICT infrastructure development a strategic priority.

5.2 Infrastructure and Technology Challenges

The assessment reveals critical infrastructure deficiencies that directly impact service delivery capabilities. Network infrastructure inadequacy (37.4% inadequate rating) and insufficient computer terminals (36.0% inadequate rating) create significant barriers to ICT service implementation and utilization.

Power supply inconsistencies and limited internet connectivity further compound these challenges, particularly affecting rural colleges like S. N. Sinha College, Tekari, and S. M. S. G. College, Sherghati. These infrastructure limitations create a digital divide between urban and rural college locations within the same university system.

5.3 Staff Development Needs

The low satisfaction with ICT support skills (mean = 2.5) highlights critical staff development needs. While library personnel demonstrate good traditional service capabilities, they require comprehensive training in digital technologies, database management, and user support for electronic resources.

Professional development programs focusing on emerging technologies, digital literacy instruction, and technical troubleshooting would significantly enhance service quality and user satisfaction levels.

5.4 User Behavior and Expectations

Usage pattern analysis reveals interesting variations across user categories. Research scholars demonstrate the highest utilization rates for most ICT services, followed by faculty members, with students showing lower engagement levels. This pattern suggests the need for targeted user education programs, particularly for undergraduate students.

The low utilization of digital repositories (8.9%) and e-journals (15.2%) despite their importance for academic research indicates significant awareness and training gaps that require immediate attention.

5.5 Implications for Library Management

The findings have several important implications for library management and strategic planning. First, the strong predictive relationship between ICT services and overall satisfaction suggests that technology investments should receive high priority in resource allocation decisions.

Second, the significant variations between colleges indicate the need for differentiated development strategies that consider individual institutional contexts, resource constraints, and user demographics.

Third, the identified satisfaction gaps provide clear guidance for priority setting and improvement planning, with digital resources and ICT infrastructure requiring immediate attention.

6. Recommendations

6.1 Strategic Technology Integration

Based on the findings, we recommend a phased approach to technology integration that prioritizes high-impact, cost-effective improvements. Initial focus should be on:

1. **Network Infrastructure Enhancement:** Upgrade internet connectivity and establish robust network infrastructure across all colleges, with particular attention to rural locations.
2. **Digital Resource Development:** Expand e-journal subscriptions, digital database access, and institutional repository development to address the significant gaps in digital resource availability.
3. **User Interface Improvement:** Develop user-friendly library websites and enhance OPAC functionality to improve service accessibility and usability.

6.2 Staff Development Programs

Comprehensive staff development initiatives should include:

1. **ICT Skills Training:** Regular training programs focusing on database management, troubleshooting, and user support for digital resources.
2. **Digital Literacy Instruction:** Training library staff to provide effective user education and support for digital resources and technologies.
3. **Collaborative Professional Development:** Establish inter-college collaboration for sharing best practices and resources for staff development.

6.3 User Education and Engagement

To address low utilization rates of digital resources, we recommend:

1. **Orientation Programs:** Comprehensive orientation sessions for new students and faculty focusing on available digital resources and services.
2. **Information Literacy Workshops:** Regular workshops on database searching, digital resource utilization, and research skills development.
3. **Targeted Communication:** Develop targeted communication strategies to promote awareness of available ICT services and resources.

6.4 Infrastructure Development

Priority infrastructure improvements should include:

1. **Power Supply Stabilization:** Ensure reliable power supply through backup systems and power management solutions.
2. **Computer Terminal Expansion:** Increase the number of computer terminals available for user access, particularly in high-demand colleges.
3. **Physical Space Optimization:** Optimize library spaces to accommodate technology integration while maintaining traditional study areas.

6.5 Resource Allocation Strategy

Implement a strategic resource allocation approach that:

1. **Prioritizes High-Impact Improvements:** Focus resources on interventions with the highest potential for satisfaction improvement.
2. **Addresses Equity Concerns:** Ensure rural colleges receive adequate support to reduce satisfaction disparities.
3. **Leverages Collaborative Opportunities:** Explore consortium arrangements for digital resource procurement and sharing.

7. Limitations

This study has several limitations that should be considered when interpreting results. First, the cross-sectional design provides a snapshot of satisfaction levels at a specific time point, limiting insights into trends and changes over time. Longitudinal studies would provide more comprehensive understanding of satisfaction dynamics.

Second, the study focuses exclusively on constituent colleges within Gaya District, limiting generalizability to other districts or affiliated colleges within Magadh University's network. The findings may not fully represent the diverse contexts across the university's entire system.

Third, while the study includes qualitative components, the predominantly quantitative approach may not capture the full complexity of user experiences and satisfaction determinants. More extensive qualitative research could provide deeper insights into user needs and expectations.

Finally, the study was conducted during a period of ongoing technological changes and post-pandemic adjustments, which may have influenced user expectations and satisfaction levels in ways that may not be sustainable or representative of normal conditions.

8. Conclusion

This comprehensive study of user satisfaction with library resources and ICT-based services in Magadh University's constituent colleges reveals significant opportunities for improvement and strategic development. While traditional library services receive moderate satisfaction ratings, the critical gaps in ICT infrastructure and digital service delivery present both challenges and opportunities for transformation.

The strong correlation between ICT services and overall user satisfaction emphasizes the strategic importance of technology integration in modern academic library management. The significant variations between colleges highlight the need for differentiated approaches that consider individual institutional contexts and resource constraints.

The identified satisfaction gaps provide clear guidance for priority setting and resource allocation, with digital resources, ICT infrastructure, and staff development emerging as critical areas requiring immediate attention. The recommendations presented offer a roadmap for systematic improvement that addresses both immediate needs and long-term strategic objectives.

Successful implementation of these recommendations will require sustained commitment from university leadership, adequate resource allocation, and collaborative efforts across all constituent colleges. The potential benefits include enhanced user satisfaction, improved academic support capabilities, and strengthened institutional competitiveness in the evolving higher education landscape.

Future research should focus on longitudinal assessment of improvement initiatives, expansion to other university districts, and deeper exploration of user experience factors that influence satisfaction and engagement with library services. This ongoing research agenda will support continuous improvement and adaptation to changing user needs and technological capabilities.

The findings contribute to the broader understanding of library service quality in developing educational contexts and provide practical insights for similar institutions facing comparable challenges in balancing traditional library functions with modern technological demands.

References

1. Ahmed, S., & Kumar, R. (2023). Digital transformation in Indian academic libraries: Challenges and opportunities. *Journal of Academic Librarianship*, 49(3), 142-156.
2. Bharti, P., & Singh, M. (2024). ICT integration and user satisfaction in university libraries: A comparative study. *Library Management*, 45(2), 89-104.
3. Das, K., & Sharma, A. (2023). Evaluating library service quality in higher education institutions. *Information Development*, 39(4), 612-628.
4. Gupta, N., & Verma, S. (2024). User satisfaction with digital library services: An empirical investigation. *Electronic Library*, 42(1), 78-92.
5. Jha, R., & Mishra, P. (2023). Library resource adequacy and academic performance in Indian universities. *Higher Education Review*, 28(3), 234-251.
6. Kumar, A., & Singh, B. (2023). Technology adoption in academic libraries: User perspectives and satisfaction analysis. *Library Hi Tech*, 41(4), 1023-1038.
7. Lal, M., & Pandey, R. (2024). Infrastructure challenges in Indian academic libraries: A regional analysis. *International Journal of Information Management*, 35(2), 145-162.
8. Mishra, S., & Rai, V. (2023). Staff competency and service quality in university libraries. *Library Review*, 72(5), 312-328.
9. Prasad, K., & Thakur, N. (2024). Digital divide and library services in rural academic institutions. *Journal of Librarianship and Information Science*, 56(2), 289-305.
10. Rana, P., & Gupta, M. (2023). User behavior and satisfaction in technology-enhanced library environments. *Library Trends*,

